

*CLAIM AMENDMENTS*

1. (Currently Amended) An electric discharge machining apparatus comprising:
  - an tool electrode having a tip end ~~thereof~~ directed ~~to~~ toward a work piece ~~with a~~ voltage ~~being~~ applied between said tool electrode and said work piece ~~to generate~~ generating a discharge;
  - a drive shaft connected with said tool electrode;
  - an electrode driving device having magnetic bearings for moving said drive shaft in three directions, including a Z-axis direction ~~that, which~~ is an axial direction of said drive shaft, a Y-axis direction that perpendicularly crosses ~~said the~~ Z-axis direction, and an X-axis direction that perpendicularly crosses ~~said the~~ Y-axis direction and ~~said the~~ Z-axis direction, by supplying electric current to electromagnetic portions of said magnetic bearings to control magnetic ~~attractions~~ attraction thereof;
  - a movable coupling connected with an end of said drive shaft and ~~being~~ movable in ~~said the~~ three directions; and
  - an electric motor connected with an end of said coupling for driving said drive shaft to rotate through said coupling.
2. (Currently Amended) The electric discharge machining apparatus as set forth in claim 1, wherein said coupling comprises:
  - a Z direction slider connected with said electric motor disposed above said drive shaft and ~~being~~ movable in ~~said the~~ Z-axis direction;
  - a Y direction slider ~~being~~ movable in ~~said the~~ Y-axis direction;
  - an X direction slider ~~being~~ movable in ~~said the~~ X-axis direction; and
  - a spring disposed between ~~said one of (i) the~~ Z direction slider and ~~said the~~ X direction slider ~~or and (ii)~~ between said Z direction slider, and said Y direction slider for urging said X direction slider and said Y direction slider toward said electric motor.
3. (Original) The electric discharge machining apparatus as set forth in claim 1, wherein said coupling comprises a universal joint.
4. (Currently Amended) The electric discharge machining apparatus as set forth in claim 1, further comprising a transportation unit mounted on said electric motor for moving said electric motor in ~~said the~~ three directions.

5. (Currently Amended) An electric discharge machining apparatus comprising:  
a tool electrode having a tip end ~~thereof~~ directed ~~to~~ toward a work piece ~~with~~, a  
voltage ~~being~~ applied between said tool electrode and said work piece ~~to generate~~ generating  
a discharge;

a drive shaft connected with said tool electrode;

an electrode driving device having magnetic bearings for moving said drive shaft at  
least in a Z-axis direction, among three directions, including ~~said~~ the Z-axis direction ~~that~~,  
which is an axial direction of said drive shaft, a Y-axis direction that perpendicularly crosses  
~~said~~ the Z-axis direction, and an X-axis direction that perpendicularly crosses ~~said~~ the Y-axis  
direction and ~~said~~ the Z-axis direction, by supplying electric current to electromagnetic  
portions of said magnetic bearings to control magnetic ~~attractions~~ attraction thereof; and

an electric motor for driving said drive shaft to rotate through a rotation transmission  
mechanism connected with said drive shaft.

6. (Currently Amended) The electric discharge machining apparatus as set forth in  
claim 1, further comprising a rotation detection unit mounted on said electric motor for  
detecting rotation information of said drive shaft, wherein ~~the~~ rotation of said drive shaft is  
controlled by a signal from said rotation detection unit.

7. (Currently Amended) An electric discharge machining apparatus comprising:  
a tool electrode having a tip end ~~thereof~~ directed ~~to~~ toward a work piece ~~with~~, a  
voltage ~~being~~ applied between said tool electrode and said work piece ~~to generate~~ generating  
a discharge;

a drive shaft connected with said tool electrode;

an electrode driving device having magnetic bearings for moving said drive shaft at  
least in a Z-axis direction, among three directions, including ~~said~~ the Z-axis direction ~~that~~,  
which is an axial direction of said drive shaft, a Y-axis direction that perpendicularly crosses  
~~said~~ the Z-axis direction, and an X-axis direction that perpendicularly crosses ~~said~~ the Y-axis  
direction and ~~said~~ the Z-axis direction, by supplying electric current to electromagnetic  
portions of said magnetic bearings to control magnetic ~~attractions~~ attraction thereof;

a plurality of ~~bladed~~ blades fixedly secured to said drive shaft; and

a rotation driving conduit having a tip end directed to said blades for guiding fluid ~~to~~  
~~the neighborhood of~~ toward and proximate said blades ~~thereby~~ to spray ~~said~~ the fluid on said  
blades ~~so as to~~ and rotate said drive shaft.

8. (Currently Amended) The electric discharge machining apparatus as set forth in claim 7, further comprising a cooling conduit mounted on said electromagnetic portions and having a tip end ~~thereof~~ directed to toward said electromagnetic portions for guiding ~~said the~~ fluid ~~so as~~ to cool said electromagnetic portions.

9. (Currently Amended) The electric discharge machining apparatus as set forth in claim 8, further comprising a fluid cooling system for cooling ~~said the~~ fluid.